Special Issue

Artificial Intelligence in Imaging Sensing and Processing

Message from the Guest Editor

Many modern intelligent systems and applications have embedded deep-learning-based image sensing and processing. For instance, smartphones, surveillance cameras, UAVs, autonomous vehicles, remote sensing systems, and medical images use advanced deep learning-based technologies to achieve state-of-the-art performance. These technologies include image/video enhancement, restoration, 3D deep estimation, 2D/3D object detection and tracking etc. Although some successful approaches and algorithms have been proposed, more innovative and efficient alternatives based on supervised, unsupervised, semi-supervised, self-supervised are expected to increase the practicality and generalizability of these systems in relation to real-world challenges. The pros and cons of CNN-based and transformer-based methods have yet to be fully discussed. Regarding the generative-based approaches, further exploration on flow-based, GAN-based, and diffusion-based models for image sensing and processing is required. On the other hand, the co-design of image sensing and image processing, related to computational imaging, is another critical issue in need of further investigation.

Guest Editor

Dr. Ching-Chun Huang
Department of Computer Science, National Yang Ming Chiao Tung University, Hsinchu, Taiwan

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Sensors
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
sensors@mdpi.com

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Editor-in-Chief

Prof. Dr. Vittorio M. N. Passaro
Dipartimento di Ingegneria Elettrica e dell'Informazione (Department of Electrical and Information Engineering), Politecnico di Bari, Via Edoardo Orabona n. 4, 70125 Bari, Italy

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